

no existing technique providing comparable results. You may nonetheless find certain contexts in which you can apply both techniques. That would reduce the concern about error but would not irrefutably establish that the technique is reliable with respect to the all new phenomena for which data is sought.⁷

There is, however, a more serious limitation to this approach to vindicating new techniques. The critical assumption in appealing to the consilience of different inductions is that the different inductions are independent of each other. When they are completely independent, though, they may not naturally align with each other. It often takes a great deal of manipulation to get a new technique to produce evidence corresponding to what has been procured previously with other techniques. This often requires taking the older technique as a reference point and altering the new technique so as to generate corresponding results. In this way, the older technique is used to calibrate the new one (Bechtel, 2002b). Although the techniques are not independent in this procedure, successful calibration provides evidence that the new technique is capturing the same underlying phenomenon as the older technique and thereby indicates that there is an objective phenomenon on which both techniques are aligning.

Suppose that your new procedure reliably produces results that are consistent, or can be made consistent, with older techniques in areas of overlap. That is, you have to some extent satisfied the second criterion. Now let us focus instead on results that extend beyond what other techniques provide, because these are where the new technique might advance inquiry. Imagine that these new results do not make sense. They do not suggest or fit into any plausible theoretical account (mechanistic model) of the phenomenon under investigation. Moreover, you are not able to generate such an account. In this situation, you are likely to be suspicious of the new results and seek an

⁷ A failure of correspondence, moreover, may also be due to artifacts created by the older technique. Cosslett emphasized this point in a chapter on electron microscopy as a technique: "It is also necessary to plead for open-mindedness in comparing electron micrographs with the results of the established optical methods. Long familiarity with them unconsciously instills the feeling that they show exactly 'what the specimen really looks like.' In the case of stained specimens obviously, but to some extent also in non-stained preparations, this cannot be true, since there is always the possibility of artifact even in optical preparations. The greater danger of artifact formation in electron microscopy should not blind one to the fact that it gives pictures that are valid within their own limitations. It is only necessary to realize that these are different limitations from those of optical methods. In short, each technique provides evidence of value, each gives a partial view of the constitution and structure of the specimen under examination, and it is the task of the research worker to correlate critically all the clues and deduce from them a coherent answer to the puzzle set by Nature" (1955, p. 524).